REMARKS

The above amendments and these remarks are responsive to the final Office Action issued on February 24, 2006. By this response, claims 10 and 20 are amended to improve wording. The amendment is related only to formality and does not generate any new matter issue. Entry of the amendment is respectfully requested. Claims 1-20 are now active for examination.

The Office Action

The Office Action rejected claims 1-8 and 18-20 under 35 U.S.C. §102(e) as being anticipated by Takahashi et al. (U.S. Publication No. 2004/0183385). Claims 1-10 and 18-20 were rejected under 35 U.S.C. §102(b) as being anticipated Gründl et al. (DE 10112799). Claims 11 and 14-17 stood rejected under 35 U.S.C. §103(a) as being unpatentable over Ishiyama (US Patent No. 5,632,351) in view of Gründl. Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Ishiyama in view of Gründl further in view of Kim et al. (U.S. Publication No. 2001/0054730). Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gründl in view of Jackson et al. (U.S. Patent No. 2,942,165). The Examiner objected to claim 10 for lacking proper antecedent basis.

Applicants submit that the objection is addressed and the rejections are overcome in view of the claim amendment and/or remarks presented herein.

The Objection to Claim 10 Is Addressed

The Office Action objected to claim 10 for lacking proper antecedent basis. By this Response, claim 10 is amended to improve wording. Applicants submit that the objection to claim 10 is addressed.

The Anticipation Rejection Based on Takahashi Is Overcome

Claims 1-8 and 18-20 were rejected as being anticipated by Takahashi. The anticipation rejection is respectfully overcome because Takahashi is not an effective reference under §102(e).

This application properly claims priority under 35 U.S.C. § 119 from Japanese patent application No. JP2003-082873, filed on March 25, 2003. A certified copy of the Japanese application was previously made of record. An English translation of the priority document and an accompanying statement indicating that the translation is accurate are attached herewith to perfect the priority claim. The submission of the translation is not an admission that the applied publication by the Examiner is substantively sufficient to support the rejection. Applicants do not waive any right to take alternative action appropriate to remove the subject matter of Sullivan in the future.

It is submitted that Takahashi, the applied document, has a filing date, August 19, 2003, later than the priority date of this application, and thus does not qualify as an effective reference under 35 U.S.C. §102(e). Therefore, Takahashi cannot support a prima facie case of anticipation. The anticipation rejection of claims 1-8 and 18-20 based on Takahashi is untenable and should be withdrawn. Favorable reconsideration of claims 1-8 and 18-20 is respectfully requested.

The Anticipation Rejection Based on Gründl Is Overcome

Claims 1-10 and 18-20 were rejected as being anticipated by Gründl. The anticipation rejection is respectfully overcome because Gründl cannot support a prima facie case of anticipation.

Claim 1 describes a power converter arranged in series with a motor to form a unitary structure through which an output shaft extends, and includes a plurality of coolers. Each of the coolers extends along a radial direction with respect to an output shaft so as to be perpendicular to the output shaft, and has a cooling surface defined by a direction parallel to the output shaft and the radial direction. A power semiconductor module is mounted on the cooling surface of at least one of the plurality of coolers. Exemplary implementations of a power converter as described in claim 1 are illustrated in Figs. 3A and 17. With the structure described in claim 1, an exemplary power converter is able to reduce its size and improve cooling performance because the cooling device is divided into a plurality of coolers that extend along a radial direction from the output shaft with the power semiconductor modules.

On the other hand, although Gründl relates to a fluid cooled electric machine having coaxial cooling channels 32, Gründl's design and structure are very different from the claimed power converter and do not meet the claimed limitations. As illustrated in Fig. 1 of this application, power semiconductor modules 71A-71D, 72A-72D and 73A-73D are located on cooler surfaces of coolers 11-16. As described in claim 1, these cooler surfaces are defined by (1) a direction parallel to the output shaft **and** (2) the radial direction. In **contrast**, as shown in Fig. 1 of Gründl, Gründl's power semiconductor module 46 is mounted on a cooling surface that is defined by (1) a direction parallel to the output shaft **and** (2) a circumferential direction, **not** the radial direction. Accordingly, Gründl fails to disclose that each of the coolers extends along a

radial direction with respect to an output shaft so as to be perpendicular to the output shaft, and has a cooling surface defined by a direction parallel to the output shaft and the radial direction; and that a power semiconductor module is mounted on the cooling surface of at least one of the plurality of coolers, as described in claim 1.

Since Gründl fails to disclose every limitation of claim 1, Gründl cannot support a prima facie case of anticipation. Accordingly, the anticipation rejection based on Gründl is overcome. Favorable reconsideration of claim 1 is respectfully requested.

Claims 2-10 and 19 depend on claim 1 and incorporate every limitation thereof. Therefore, claims 2-10 and 19 are patentable over Gründl by virtue of their dependencies on claim 1. Favorable reconsideration of claim 2-10 and 19 is respectfully requested.

Claim 18 describes a method for cooling for cooling a power converter. A plurality of coolers are provided. Each of the coolers extends along a radial direction with respect to an output shaft of a motor formed in series with the converter so as to be perpendicular to the output shaft. Similar to the converter of claim 1, the method of claim 18 provides a cooling surface defined by a direction parallel to the output shaft and the radial direction, and a power semiconductor module is mounted on the cooling surface of at least one of the coolers. As discussed earlier relative to claim 1, Gründl fails to disclose these features. Consequently, for at least the same reasons as for claim 1, claim 18 is patentable over Gründl. Favorable reconsideration of claim 18 is respectfully requested.

Claim 20 depends on claim 18 and incorporates every limitation thereof. Therefore, claim 20 is patentable over the documents of record for at least the same reasons as for claim 18.

The Obviousness Rejections Are Overcome

Claims 11 and 14-17, directly or indirectly, depend on claim 1 and were rejected as being unpatentable over Ishiyama in view of Gründl. It is submitted that the cited documents cannot support a prima facie case of obviousness.

As discussed earlier relative to claim 1, Gründl fails to meet every feature described in claim 1. The other cited document, Ishiyama, also fails to alleviate the deficiencies of Gründl.

Ishiyama's power converter includes a single piece of power sink 20 for dissipating heat generated by semiconductor devices 21, 23 mounted on the surface of the power sink 20. The single power sink 20 encloses a plurality of cooling fins 47. Each of the cooling fins 47 is disposed parallel to an output shaft 13. As shown in Fig. 8, **each** of the cooling fins 47 extends in a direction substantially tangential to the shaft 13, **not** along a radial direction relative to shaft 13, as described in claim 1. Furthermore, each cooling fins 47 only has a cooling surface substantially parallel to the shaft 13. The cooling surface of each cooling fans 47 is not defined by both a direction **parallel** to the output shaft and the **radial** direction, as described in claim 1. Moreover, according to Ishiyama, the semiconductor devices 21, 23 are mounted to the heat sink 20 enclosing all the cooling fins 47. None of the semiconductor devices 21, 23 actually attaches to the cooling surface of any of the cooling fins 47. Thus, the semiconductor devices 21, 23 of Ishiyama do not meet the limitation of claim 1, which requires that the semiconductor devices be mounted to a cooling surface of at least one of the coolers. Accordingly, similar to Gründl, Ishiyama also fails to disclose "a plurality of coolers each of which extends along a radial direction with respect to an output shaft so as to be perpendicular to the output shaft and having a cooling surface defined by a direction parallel to the output shaft and the radial direction; and a power semiconductor module mounted on the cooling surface of at least one of the plurality of

coolers to supply electric power to a motor," as required by claim 1. Thus, Ishiyama, even if combined with Gründl, does not meet every limitation of claim 1, the features of which are incorporated into claims 11 and 14-17 by virtue of their dependencies. Accordingly, claims 11 and 14-17 are patentable over the combination of Ishiyama and Gründl. Favorable reconsideration of claims 11 and 14-17 is respectfully requested.

Claim 12 indirectly depends on claim 1 and was rejected as being unpatentable over Ishiyama in view of Gründl and further in view of Kim. As discussed earlier, both Ishiyama and Gründl fail to teach every limitation of claim 1, the base claim on which claim 12 depends. Kim does not alleviate these deficiencies. Thus, Ishiyama and Gründl, even if modified by Kim, still fail to disclose every limitation of claim 1, all the features of which are incorporated into claim 12 by virtue of their dependencies from claim 1. Therefore, claim 12 is patentable. Favorable reconsideration of claim 12 is respectfully requested.

Claim 13 depends on claim 1 and was rejected as being unpatentable over Gründl in view of Jackson. As discussed earlier relative to claim 1, Gründl fails to meet every feature described in claim 1. The other cited document, Jackson, also fails to alleviate the deficiencies of Gründl. Thus, Gründl, even if modified by Jackson, still fails to disclose every limitation of claim 1, all the features of which are incorporated into claim 13 by virtue of their dependencies from claim 1. Therefore, claim 13 is patentable. Favorable reconsideration of claim 13 is respectfully requested.

Conclusion

For the reasons given above, Applicants believe that this application is in condition for allowance and Applicants request that the Examiner give the application favorable consideration

and permit it to issue as a patent. However, if the Examiner believes that the application can be put in even better condition for allowance, the Examiner is invited to contact Applicants' representatives listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to **Deposit Account 500417** and please credit any excess fees to such deposit account.

Respectfully submitted,

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